NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA CONSERVATION PRACTICE STANDARD

SHALLOW WATER MANAGEMENT FOR WILDLIFE

(Acre)

Code 646

DEFINITION

Managing shallow water on agricultural lands and moist soil areas for wildlife habitat.

PURPOSES

- To provide open water areas on agricultural fields and moist soil areas to facilitate waterfowl resting and feeding.
- To provide habitat for shore and wading birds, reptiles, amphibians, and other wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where the intended purpose is to create and/or manage shallow water on agricultural and moist soil areas where water can be impounded or regulated by diking, ditching, or flooding.

This practice can be used to facilitate the conservation of declining wetland dependent species.

This practice does not apply to Virginia Conservation Practice Standard *Wetland Restoration (Code 657)*, intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to original conditions, or *Wetland Enhancement (Code 659),* intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions.

Optimum sites typically have slopes that are 2% or flatter where a majority of the area is made up of acceptable water depths established within reasonable economic constraints. Steeper sites will typically be more expensive to construct.

CRITERIA

Soils should have low permeability to inhibit subsurface drainage and allow for maintenance of proper water levels.

Shallow water impoundments require an adequate water supply for reflooding. Potential water supplies include floodwaters, upland runoff, or a pumped source. A water control structure for removing water is required when artificial dewatering is planned. Water control structures are not required for natural drawdowns (e.g., excavated areas planned for drawdown through evaporation). The ability to completely de-water the site is desirable for management purposes.

Landowner shall obtain all local, state, and federal permits necessary.

If pumping is needed, water rights must be assured.

The Virginia Conservation Practice Standards *Dike (Code 356), Pumping Plant for Water Control (Code 533),* and *Structure for Water Control (Code 587)* will be used as appropriate. Refer to Chapter 6 of the Engineering Field Handbook, "Structures," for additional design information. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose. Embankments and auxiliary spillways will be normally designed using the Virginia Conservation Practice Standard *Wetland Creation (Code 658)*.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

The site must meet the requirements of the targeted wildlife species.

Water levels shall be maintained between 1 to 18 inches in depth over at least 75% of the area during periods of planned inundation. (Overall water depth should average 6-18 inches).

A buffer zone at least 35 feet wide (the wider the better) shall be provided around the site to protect and enhance the wetland for wildlife. The buffer may consist of an existing, well-vegetated plant community comprised primarily of native perennial grasses, forbs, and/or woody species, or a plant community may need to be established either by natural regeneration or by planting. Selection of native plant species to be established in the buffer shall be based on the planned wildlife species.

Existing wetlands will be preserved, protected, or mitigated (mitigation is applicable only where existing wetland size and function are minimal) from effects that would reduce existing functions.

The effect of invasive plant materials will be evaluated. Species that may be invasive will not be used.

ESTABLISHING VEGETATION

All embankments shall be established in switchgrass at the rate established for the critical area planting practice in the *Plant Establishment Guide for Virginia* plus a nurse crop of ½ bushel of wheat or rye. This mix should be established during the normal establishment period of May-June.

Optimum planting results can be made using a drill applied to firm soil conditions. If use of a drill is not practical, broadcast the seed mix to firm soil conditions followed by another firming.

Outside of the normal planting period, noted above, use a temporary cover as indicated below prior to establishing the switchgrass mix:

July 1 – Sept. 1 – 20 lbs. (1/2 bushel) of German or Pearl Millet

Sept. 2 – Mid April – 30 lbs. (1/2 bushel) wheat

NOTE: Wheat may need a herbicide burndown (Roundup) 4-6 weeks prior to planting switchgrass to reduce vegetation and to establish good seed ground contact.

Borrow and spoil disposal areas will be established to any species mix of native warm season grasses listed in the *Plant Establishment Guide for Virginia*. An alternative is to use the conservation cover, orchard grass – ladino clover mix from the *Plant Establishment Guide for Virginia.*

Permits are not required where there is no impact to existing wetlands and streams. Nationwide Permit 27 (Section 404 of the Clean Water Act) authorizes certain activities impacting wetlands where there is limited incidental loss and creation results in a net gain of wetlands. Contact the Corps of Engineers and/or Department of Environmental Quality (DEQ) if there are any wetland questions or stream impacts.

Planning and implementation of this practice will be preceded by an environmental evaluation using the "Environmental Evaluation Data Sheet", Form VA-EE-1 and related guidelines found in General Manual-190, Part 410 (Virginia Amendments).

CONSIDERATIONS

Consider timing of the flooding and drawdown, as well as type of drawdown, on plant species composition. Slow (1-3 inches/week) March-April drawdowns to drained conditions over at least a two-week period are best for many wildlife species. Apply slow (3-4 inches/week) fall flood up beginning in mid-August for waterfowl or mid-July for shorebirds.

Consider the plant species flooding tolerances and the composition of seed in the soil at the site (moist soil areas).

Existing wetland or wildlife habitats that would be associated with the practice should be evaluated.

Establishment of multiple shallow water areas or compartments where a variety of flooding and drawdown regimes can be used for habitat diversity.

When manipulating vegetation on areas planned for hunting, consider applicable baiting laws

Irregular shorelines and a variety of depths will provide a diversity of habitats.

Potential damage from muskrat, beaver, and resident geese, etc., on establishment and management of the site shall be considered.

Consider seeding supplemental annual food sources in (plant and flood) or adjacent to the pool area. Also consider that domestic crop seed provides less nutrition and breaks down quicker in flooded conditions than naturally produced wetland volunteer seed (moist soil).

Be aware that "moist soil" management requires somewhat closer timing and management requirements than "plant and flood" techniques.

Long-term maintenance requirements of the site, including water control structures, embankments, and vegetation should be identified early in the design process.

Consider the effects of residual herbicides and other contaminants.

The effects on movement of dissolved substances into groundwater and to downstream surface waters should be evaluated.

Installation of this practice may alter downstream flows that would affect other water uses or users.

PLANS AND SPECIFICATIONS

Plans and specifications for installing structures for water control shall be in keeping with this standard and shall prescribe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications shall be prepared for each site. Use approved specifications, job sheets, technical notes, or other acceptable documentation. The planner should work closely with the NRCS biologist and/or engineer, U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, or Ducks Unlimited wetland specialists to develop plans and specifications.

Requirements for the operation and maintenance of the practice shall be incorporated into site specifications.

A plan-profile drawing will be prepared for all jobs. Drawings will be prepared on the standard sheets or state approved forms. Information to support design will be recorded in the engineering field book or case file as appropriate. As a minimum, record and maintain the following planning and design data. Include information on either the drawings, approved forms, or in the engineering field book as appropriate:

1. Completed "Environmental Evaluation", Form VA-EE-1.

2. Location map. Include tract number, field number(s), and acreage in field(s). Include plan view of structure(s) in relation to an identifiable point.

3. Drainage area and soil type.

4. Type of channel plugs needed, where applicable.

5. Method of spoil disposal.

6. Engineering Layout Surveys.

7. Structures, where applicable.

8. Soil borings, where applicable.

9. Yardage calculations when needed for performance certification.

10. Outlet conditions.

11. Cross-reference to appropriate engineering field books will be made on drawings and plans.

12. Recommendations for vegetation.

As a minimum, record and maintain the following check data:

1. For each design section, record cross-section notes to show grade, bottom width, top width, depth, side slopes, berm width, and spoil banks if specified.

2. Data on all structures installed.

3. Adequacy of outlet.

4. Certification that practice meets standards and specifications. Note any exceptions.

5. A statement that the following have been satisfactorily completed:

   a) Spoil spreading

   b) Seeding or successful establishment of Vegetation

All field survey notes and construction check data will be recorded in a standard engineering field book or other approved forms in accordance with Technical Release 62 and Chapter 1, Engineering Field Handbook.

OPERATION AND MAINTENANCE

During the summer drawdown period, the impoundment should be disked, burned, or sprayed with an approved herbicide to control invasion by undesirable plants. These measures should be applied at 2 to 3 year intervals. In Virginia, such plants include cockleburs, cattails, and willows.

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

- Timing and setting of water control structures for establishment of planned water levels and management of vegetation.
- Damage inspection schedule for embankments and structures.
- Management requirements to maintain vegetation, including control of unwanted plants.
- Periodic cleanout of sediment may be needed, especially for excavated areas.
- Upland buffers will be maintained and managed to enhance wetland functions.

REFERENCES

1. NRCS, Engineering Field Handbook, Chapter 6, “Structures” and 13, “Wetland Restoration, Enhancement, or Creation”.
2. NRCS, Virginia Field Office Technical Guide (FOTG), Section IV.
3. NRCS, General Manual-190, Part 410, “Compliance with NEPA”, Subparts A, B, and C, VA Amendment 4 (Includes Form VA-EE-1).
4. ASTM Standards.
5. U.S. Fish and Wildlife Service, Waterfowl Management Handbook, Fish and Wildlife Leaflet 13, 1988.
6. U.S. Fish and Wildlife Service, Management of Seasonally Flooded Impoundments for Wildlife, Resource Publication 148.
7. Helmers, D. L., Shorebird Management Manual, Western Hemisphere Shorebird Reserve Network, Manomet, MA, 1992.
8. Rundle, W. D. and L. H. Frederickson, Managing Seasonally Flooded Impoundments for Migrant Rails and Shorebirds.

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Approved Practice Narratives

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646 D1 Shallow Water Management for Wildlife: A shallow water area(s) will be constructed at the location(s) shown on the plan map. The area(s) will be managed primarily for waterfowl. Design, operation and maintenance plans will be provided.

646 D2 Shallow Water Management for Wildlife: A shallow water area for wildlife will be constructed at the location shown on the plan map. The area will be managed to produce volunteer vegetation by manipulating water levels (moist soil management). Design, operation and maintenance plans will be provided.

646 D3 Shallow Water Management for Wildlife: The shallow water area indicated on the plan map will be managed for wildlife through manipulation of water levels. Design, operation and maintenance plans will be provided.

646 D4 Shallow Water Management for Wildlife: A shallow water area will be constructed at the location indicated on the plan map. The area will be managed for a variety of wildlife species by timed manipulations of water levels. Design, operation and maintenance plans will be provided.